

Fig. 1A

GCC	ACT	GTT	GCT	GGC	TGG	GGC	GCT	ACC	TCT	GAG	GGC	GGC	AGC	TCT	ACT	CCC	GTC	AAC	CTT	540
Ala	Thr	Val	Ala	Gly	Trp	Gly	Ala	Thr	Ser	Glu	Gly	Gly	Ser	Ser	Thr	Pro	Val	Asn	Leu	160
																				145
CTG	AAG	GTT	ACT	GTC	CCT	ATC	GTC	TCT	CGT	GCT	ACC	TGC	CGA	GCT	CAG	TAC	GGC	ACC	TCC	600
Leu	Lys	Val	Thr	Val	Pro	Ile	Val	Ser	Arg	Ala	Thr	Cys	Arg	Ala	Gln	Tyr	Gly	Thr	Ser	180
																				165
GCC	ATC	ACC	AAC	CAG	ATG	TTC	TGT	GCT	GGT	GTT	TCT	TCC	GGT	GGC	AAG	GAC	TCT	TGC	CAG	660
Ala	Ile	Thr	Asn	Gln	Met	Phe	Cys	Ala	Gly	Val	Ser	Ser	Gly	Gly	Lys	Asp	Ser	Cys	Gln	200
																				185
GGT	GAC	AGC	GGC	CCC	ATC	GTC	GAC	TCC	AAC	ACT	CTT	ATC	GGT	GCT	TCT	TGG			720	
Gly	Asp	Ser	Gly	Gly	Pro	Ile	Val	Asp	Ser	Ser	Asn	Thr	Ile	Gly	Ala	Val	Ser	Trp		
																			205	
GGT	AAC	GGA	TGT	GCC	CGA	CCC	AAC	TAC	TCT	GGT	GTC	TAT	GCC	AGC	GTT	GGT	GCT	CTC	CGC	780
Gly	Asn	Gly	Cys	Ala	Arg	Pro	Asn	Tyr	Ser	Gly	Val	Tyr	Ala	Ser	Val	Gly	Ala	Leu	Arg	240
																			225	
TCT	TTC	ATT	GAC	ACC	TAT	GCT	TAA	CCT	TGT	TGG	AAG	CGT	CGA	GAT	GTT	CCT	TGA	ATA	840	
Ser	Phe	Ile	Asp	Thr	Tyr	Ala													245	
																			245	
TTC	TCT	AGC	TTG	AGT	CTT	GGG	TAC	GAA	ACC	TGT	TTG	AGA	AAT	AGG	TTT	CAA	CGA	GTT	AAG	900
AAG	ATA	TGA	GTT	GAT	TTC	AGT	TGG	ATC	TTA	GTC	CTG	GTT	GCT	CGT	CGT	AAT	AGA	GCA	ATC	960
ATA	GCC	CAA	ATT	GAA	TAT	GAA	ATT	TGA	TGA	AAA	TAT	TC								998

Fig. 1B

ATC	ATC	AAC	CAC	TCT	TCA	CTC	TTC	AAC	TCT	CCT	CTC	TTG	GAT	ATC	TAT	CTC	TTC	ACC	ATG	60	
																			Met	1	
GTC	AAG	TTC	GCT	TCC	GTC	GTT	GCA	CTT	GTC	CCC	CTG	GCT	GCC	GCT	CCT	CAG	GAG		120		
Val	Lys	Phe	Ala	Ser	Val	Ala	Leu	Val	Ala	Pro	Leu	Ala	Ala	Ala	Pro	Gln	Glu				
																			20		
																			15		
ATC	CCC	AAC	ATT	GTT	GGT	GGC	ACT	TCT	GCC	AGC	GCT	GCC	GGC	GAC	TTT	CCC	TTC	ATC	GTG	AGC	180
Ile	Pro	Asn	Ile	Val	Gly	Gly	Thr	Ser	Ala	Ser	Ala	Gly	Asp	Phe	Pro	Phe	Ile	Val	Ser		40
																				30	
ATT	AGC	CGC	AAC	GGT	GGC	CCC	TGG	TGT	GGA	GGT	TCT	CTC	CTC	AAC	GCC	AAC	ACC	GTC	TTC	240	
Ile	Ser	Arg	Asn	Gly	Gly	Pro	Trp	Cys	Gly	Gly	Ser	Leu	Leu	Asn	Ala	Asn	Thr	Val	Leu		
																			60		
ACT	GCT	GCC	CAC	TGC	GTT	TCC	GGA	TAC	GCT	CAG	GGT	TTC	CAG	ATT	CGT	GCT	GGC	AGT		300	
Thr	Ala	Ala	His	Cys	Val	Ser	Gly	Tyr	Ala	Gln	Ser	Gly	Phe	Gln	Ile	Arg	Ala	Gly	Ser		
																			80		
CTG	TCT	CGC	ACT	TCT	GGT	ATT	ACC	TCC	TCG	CTT	TCC	TCC	GTC	AGA	GTT	CAC	CCT	AGC		360	
Leu	Ser	Arg	Thr	Ser	Gly	Ile	Thr	Ser	Ser	Leu	Ser	Ser	Val	Arg	Val	His	Pro	Ser			
																			100		
TAC	AGC	GGA	AAC	AAC	GAT	CTT	GCT	ATT	CTG	AAG	CTC	TCT	ACT	TCC	ATC	CCC	TCC	GGC		420	
Tyr	Ser	Gly	Asn	Asn	Asn	Asp	Leu	Ala	Ile	Leu	Lys	Leu	Ser	Thr	Ser	Ile	Pro	Ser	Gly		
																			120		
GGA	AAC	ATC	GGC	TAT	GCT	CGC	CTG	GCT	GCT	TCC	GGC	TCT	GAC	CCT	GTC	GCT	GGA	TCT	TCT		480
Gly	Asn	Ile	Gly	Tyr	Ala	Arg	Leu	Ala	Ala	Ser	Gly	Ser	Asp	Pro	Val	Ala	Gly	Ser	Ser		
																			140		
																			135		
																			125		
																			85		
																			105		
																			90		
																			75		
																			65		
																			55		
																			45		
																			30		
																			25		
																			20		
																			15		
																			10		
																			5		

Fig. 2A

GCC	ACT	ACT	GCT	GGC	TGG	GGC	GCT	ACC	TCT	GAG	GGC	GGC	AGC	TCT	ACT	CCC	GTC	AAC	CCT	540
Ala	Thr	Thr	Ala	Gly	Trp	Gly	Ala	Thr	Ser	Glu	Gly	Gly	Ser	Ser	Thr	Pro	Val	Asn	Leu	
																				145
																				150
																				155
																				160
CTG	AAG	GTT	ACT	GTC	CCT	ATC	GTC	TCT	CGT	GCT	ACC	TGC	CGA	GCT	CAG	TAC	GGC	ACC	TCC	600
Leu	Lys	Val	Thr	Val	Pro	Ile	Val	Ser	Arg	Ala	Thr	Cys	Arg	Ala	Gln	Tyr	Gly	Thr	Ser	
																				165
																				170
																				175
																				180
GCC	ATC	ACC	AAC	CAG	ATG	TTC	TGT	GCT	GGT	GCT	TCC	GGT	GGC	TCT	TCT	TGC	ATG	GGT	GAC	660
Ala	Ile	Thr	Asn	Gln	Met	Phe	Cys	Ala	Gly	Ala	'Ser	Gly	Gly	Ser	Ser	Cys	Met	Gly	Asp	
																				185
																				190
																				195
AGC	GGC	GGC	CCC	ATC	GTC	GAC	AGC	TCC	AAC	ACT	CTT	ATC	GGT	ACT	GTC	TCT	TGG	GGT	TCT	720
Ser	Gly	Gly	Pro	Ile	Val	Asp	Ser	Ser	Asn	Thr	Leu	Ile	Gly	Ile	Val	Ser	Trp	Gly	Ser	
																				205
																				210
																				215
GGA	ACT	TGT	TCT	ACT	CTC	GCT	GTC	TAT	GCC	AGC	GCT	GTT	GGT	GCT	CTC	CGC	TCT	TTC	TTC	780
Gly	Thr	Cys	Ser	Thr	Ser	Thr	Pro	Gly	Val	Tyr	Ala	Ser	Val	Gly	Ala	Leu	Arg	Ser	Phe	
																				225
																				230
																				235
ATT	GAC	ACC	TAT	GCT	TAA	ATA	CCT	TGT	TGG	AAG	CGT	CGA	GAT	GTT	CCT	TGA	ATA	TTC	TCT	840
Ile	Asp	Thr	Tyr	Ala																245
																				245
AGC	TTG	AGT	CTT	GGA	TAC	GAA	ACC	TGT	TTG	AGA	AAT	AGG	TTT	CAA	CGA	GTT	AAG	AAG	ATA	900
TGA	GTT	GAT	TTC	AGT	TGG	ATC	TAA	GTC	CTG	GTT	CGT	AAT	AGA	GCA	ATC	TAG	ATA	GCC	960	
CAA	ATT	GAA	TAT	GAA	ATT	TGA	TGA	AAA	TAT	TC										992

Fig. 2B

F. oxysporum trypsin
F. oxysporum trypsin mutant
Bovine chymotrypsin A

S	I	S	R	N	G	G	P	W	C	G	G	S	L	L	N	A	N	T	V	L	T	A	A	H	C	V	S	G	Y	A	Q	S	G	F	Q	I	R	A	G														
S	I	S	R	N	G	G	P	W	C	G	G	S	L	L	N	A	N	T	V	L	T	A	A	H	C	V	S	G	Y	A	Q	S	G	F	Q	I	R	A	G														
S	L	-	-	S	R	D	K	T	G	F	H	F	C	G	G	S	L	I	N	E	W	V	V	T	A	A	H	C	-	-	G	V	T	T	S	D	V	V	V	A	G												
S	L	-	-	S	R	T	S	G	G	I	T	S	S	L	S	S	V	R	V	H	P	S	Y	S	-	-	G	N	N	N	D	L	A	I	L	K	L	S															
S	L	-	-	S	R	T	S	G	G	I	T	S	S	L	S	S	V	R	V	H	P	S	Y	S	-	-	G	N	N	N	D	L	A	I	L	K	L	S															
E	F	D	Q	G	S	S	E	K	I	Q	K	L	K	I	A	K	V	F	K	N	S	K	Y	N	S	L	T	I	N	D	I	T	L	K	L	S																	
T	S	I	P	S	G	G	N	I	G	Y	A	R	L	A	A	S	G	S	D	P	V	A	G	S	S	A	T	V	A	G	W	G	A	T	S	E	G	G															
T	S	I	P	S	G	G	N	I	G	Y	A	R	L	A	A	S	G	S	D	P	V	A	G	S	S	A	T	T	A	G	W	G	A	T	S	E	G	G															
T	A	A	S	F	S	Q	T	V	S	A	V	C	L	P	S	A	S	D	D	F	A	A	G	T	T	C	V	T	T	G	W	G	L	T	R	Y	T	N	A														
S	T	P	V	N	L	L	K	V	T	V	P	I	V	S	R	A	T	C	R	A	Q	Y	G	T	S	A	I	T	N	Q	M	F	C	A	G	V	S	S	G														
S	T	P	V	N	L	L	K	V	T	V	P	I	V	S	R	A	T	C	R	A	Q	Y	G	T	S	A	I	T	N	Q	M	F	C	A	G	-	A	S															
N	T	P	D	R	L	Q	Q	A	S	L	P	L	L	S	N	T	N	C	K	K	Y	W	G	T	-	K	I	K	D	A	M	I	C	A	G	-	A	S															
G	K	D	S	C	Q	G	D	S	G	G	P	I	V	D	S	-	-	S	N	T	L	I	G	A	V	S	W	G	N	G	-	C	A	R	P	N	Y	S															
G	-	S	S	C	M	G	D	S	G	G	P	I	V	D	S	-	-	S	N	T	L	I	G	I	V	S	W	G	S	G	T	C	-	S	T	S	T	P															
G	V	S	S	C	M	G	D	S	G	G	P	L	V	C	K	K	N	G	A	W	T	L	V	G	I	V	S	W	G	S	S	T	C	-	S	T	S	T	P														
G	V	Y	A	S	V	G	A	L	R	S	F	I	D	T	Y	A	G	V	Y	A	S	V	G	A	L	R	S	F	I	D	T	Y	A	G	V	Y	A	R	V	T	A	L	V	N	W	V	Q	Q	T	L	A	A	N

Fig. 3

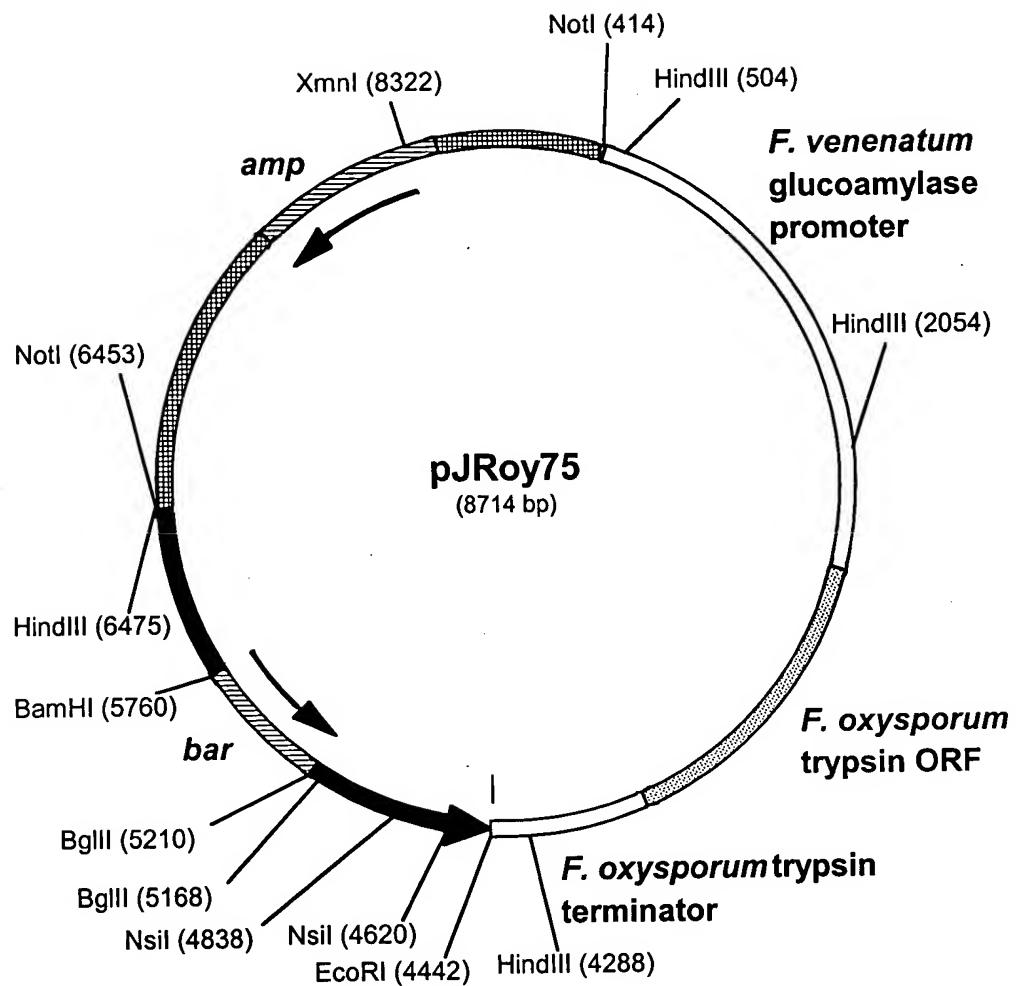


Fig. 4

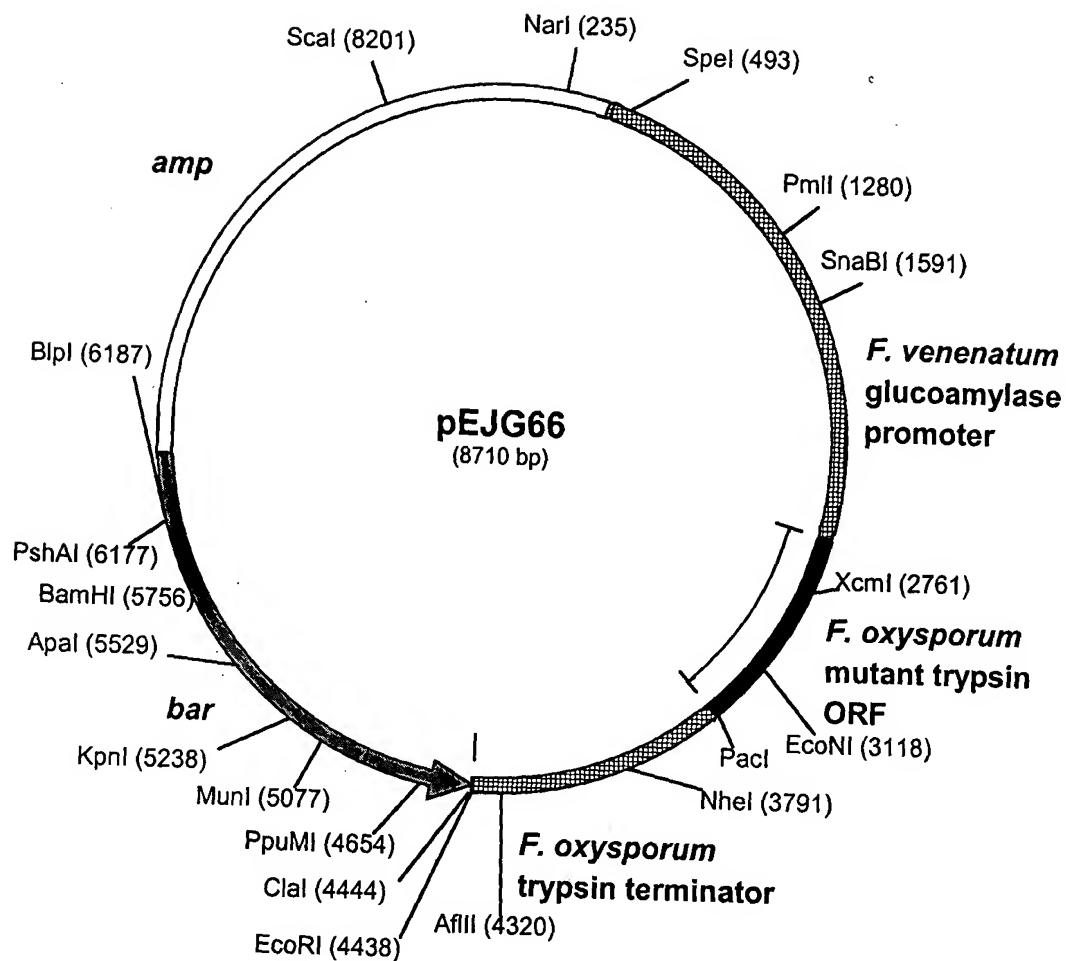


Fig. 5

Peptide Substrate Fingerprinting

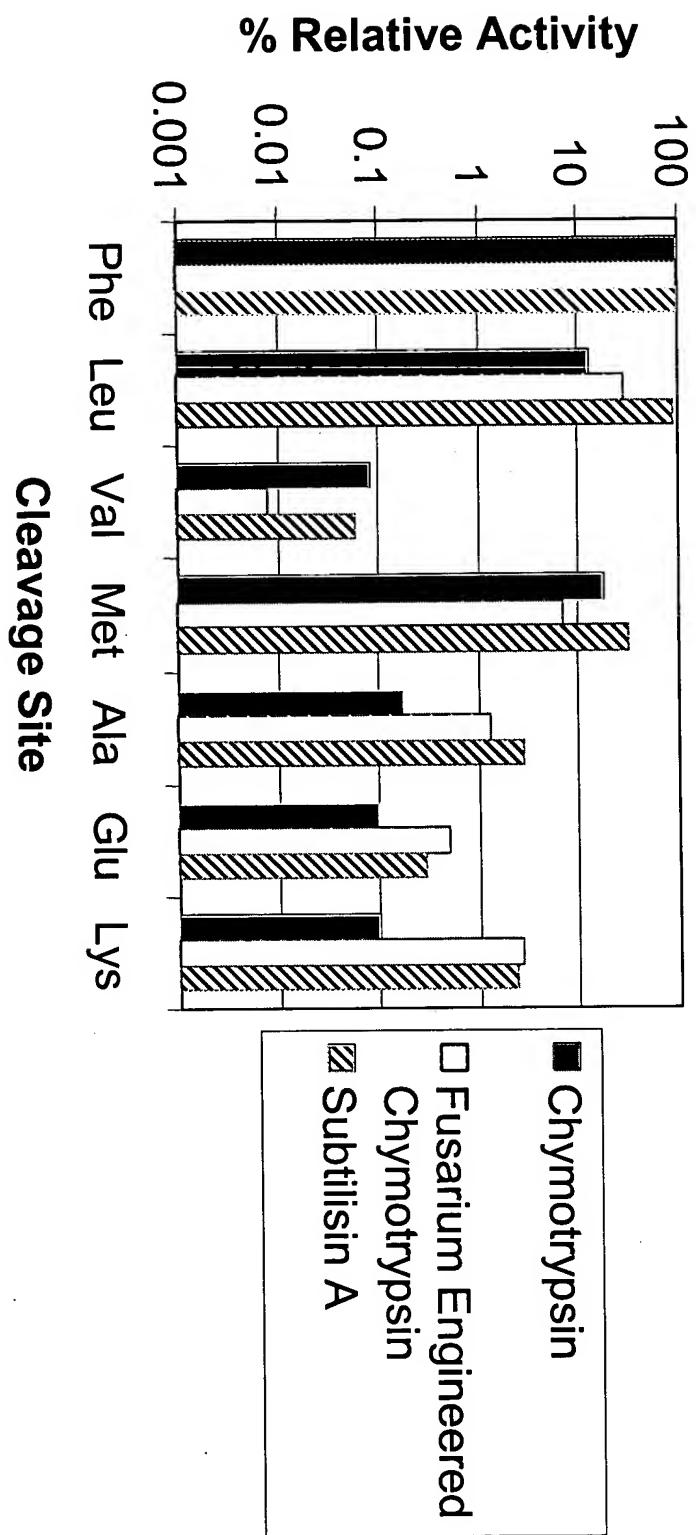


Fig. 6

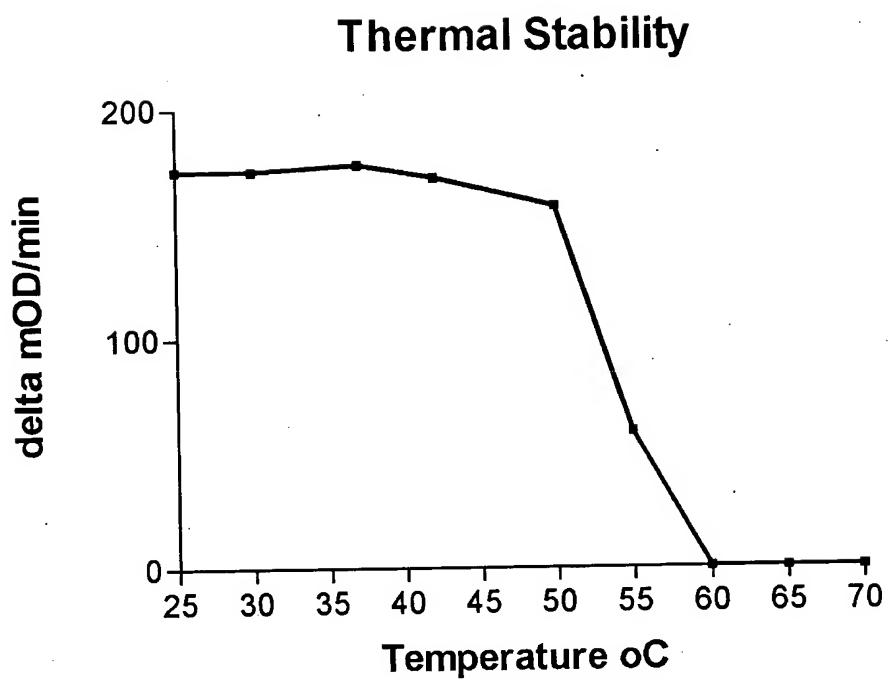


Fig. 7

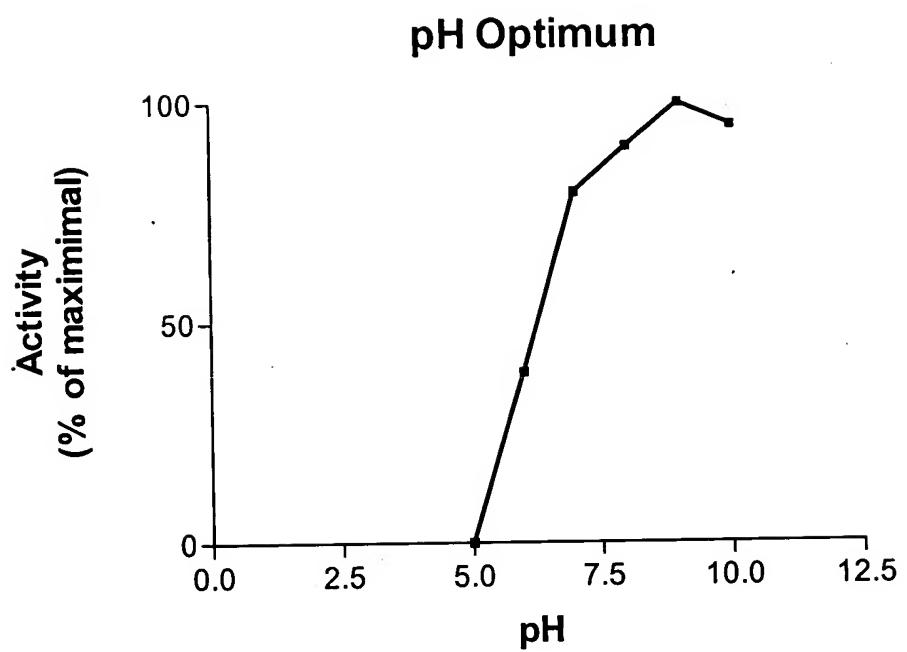


Fig. 8